

2.8 Noise

A noise study of the Shadow Run Ranch TM 5223RPL³ project site was conducted by Jeremy Loudon, who is on the County's CEQA Consultant List approved for the preparation of acoustical studies. The resulting report, "Noise Assessment Shadow Run Ranch Residential Development TM 5223 RPL, ER 00-02-035, P00-030" dated June 20, 2014, is provided as Appendix J to this DEIR.

2.8.1 Existing Conditions

Existing conditions relative to the project's potential noise impacts are governed primarily by the environmental setting. The proposed project is located in the foothills of Palomar Mountain on the north side of the San Luis Rey River valley. The area is served by State Route 76/Pala Road (SR76) which forms the site's southern boundary. The site is bounded on the north by Indian reservations and on the east by estate residential development and agricultural uses.

Existing noise is generated from traffic on SR76 and adjacent agricultural activities. SR76 and Adams Drive provide access to the site. Traffic is generally light in this rural setting; however, some increase in traffic has occurred with the development of Indian gaming facilities located in the river valley. Agricultural activities typically consist of grove maintenance and picking operations.

Noise measurements of existing sound levels were taken at two locations on the project site on September 29, 2011 from approximately 4:30 pm to 5:30 pm. Location M1 was located approximately 200 feet from SR76 near future Lot 6. Location M2 was located approximately 400 feet from SR76, at proposed Lot 15. Figure 2-8-1, "Noise Monitoring Locations," shows the monitoring locations overlain on the project's Grading Plan. The ambient Leq noise level measures on the project site range from 47 to 51 dBA Leq, as shown below.

Location	Time	Noise Levels (dBA)					
		Leq	Lmin	Lmax	L10	L50	L90
M1	4:30–5:30 p.m.	50.7	46.0	61.4	52.2	49.6	47.9
M2		47.1	39.8	63.2	48.5	44.5	42.0

Sensitive riparian habitats are associated with onsite drainages, and native habitats such as Coastal Sage Scrub and Oak Woodland occur in the area. Noise-sensitive species expected in the area include raptors, heron and several reptile species. Least Bell's Vireo (*Vireo bellii pusillus*), a state-listed and federally-listed Endangered migratory songbird,

occurs in dense willow-dominated riparian habitats similar to that which is found patches along Frey Creek. Least Bell's Vireo is also known to nest in nearby upland areas, such as orange groves. The nearest known reproducing populations of this rare species are in the SLRR, which is located a short distance to the south of the property (although specimens are not reported in proximity to the site). All of the riparian habitats on this site are considered potentially 'occupied' by Least Bell's Vireo and other riparian nesting species during the breeding season.

2.8.2 Analysis of Project Effects and Determination as to Significance

The expected roadway noise impact from SR76 was projected using Sound32, Caltrans' version of the Federal Highway Administration (FHWA) traffic noise model. The results of this analysis are based on the Caltrans Highway Design Manual California Vehicle Noise Emission Levels (CALVENO).

Modeling points in noise sensitive land use areas were placed five feet above the pad elevation and approximately ten feet from the top of the slope. All first floor modeling points were placed five feet above the proposed finished floor elevation at the building façade. Second floor modeling points were located fifteen feet above the proposed finished floor elevation.

The key factors which determine the projected impact of vehicular traffic noise include the lane travel speed, the mix of cars and trucks in the roadway volume, surrounding site conditions, and the peak hour traffic volumes. Input data was taken using the site plans to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to the noise barrier, the back yard modeling point and at the building façade to predict the future noise environment. For the purpose of this analysis, the roadway segments extend a minimum of 500 feet beyond any modeling point location.

Noise is measured in sound pressure levels known as decibels (dB). 'A-weighted' decibels (dBA) reflect only those frequencies which are audible to the human ear. The Community Noise Equivalent Level (CNEL) is the weighted average of the intensity of a sound with corrections for time of day and averaged over 24 hours. The County of San Diego relies on the CNEL noise standard to assess transportation related impacts on noise sensitive land uses. Guidelines discussed below use the dBA CNEL measurements to determine impact significance. Noise contours are lines that are drawn around a noise source indicating a constant or equal level of noise exposure. The use of noise contours allows graphic representation of the areas where significant noise impacts occur.

Noise-sensitive land uses (NSLU) are residential developments, seasonal residential developments, and facilities such as hospitals, nursing homes/retirement homes, schools, and daycare centers. The onsite noise-sensitive land uses include the 44 single-family homes and the recreation area.

2.8.2.1 *Guidelines for the Determination of Significance – Noise Sensitive Land Uses Affected by Airborne Noise*

According to the *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements for Noise* (January 2009) the project would have a significant noise impact to exterior or interior locations if it would:

- 1) Result in the exposure of any on- or off-site, existing or reasonably foreseeable future NSLU to exterior or interior noise (including noise generated from the project, together with noise from roads [existing and planned Mobility Element roadways], railroads, airports, heliports and all other noise sources) in excess of any of the following:

Exterior Locations

- 60 dB (CNEL) or
- An increase of 10 dB (CNEL) over pre-existing noise

For single-family detached units, exterior noise is measured at an outdoor living area, adjoining and on the same lot as the dwelling which contains the following minimum area:

Net Lot Area	Minimum Area of Outdoor Space
Up to 4,000 sq. ft	400 sq. ft.
4,000 sq. ft. to 10 acres	10% of net lot area
Over 10 acres	1 acre

For all other projects, exterior noise will be measured at all exterior areas provided for group or private usable open space.

Interior Locations

- A level of 45 dBA (CNEL) except for the following cases:

Exception	Not to Exceed
Rooms that are occupied only a part of the day, i.e. schools, libraries or similar facilities	Interior one-hour average due to outside noise should not exceed 50dB
Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cu. Ft.	No criteria.

2.8.2.2 Analysis - Noise Sensitive Land Uses Affected by Airborne Noise

Guideline 1A

The primary source of noise near the project area will be from the traffic along SR76. The project's internal roads will also generate some background traffic noise. However, due to the distance, topography, and low traffic volumes and speeds that are anticipated, traffic noise from these internal roads will not make a significant contribution to the noise environment.

Future noise contours for SR 76 for 75dBA CNEL and 60 dBA CNEL were modeled based upon roadway traffic noise for unmitigated future buildout conditions (Figure 2-8-2, "Future Noise Contours").

The worst-case first floor 60 dBA CNEL contour, due to the changes in elevations and top-of-slopes, extends approximately 295 feet from SR76. The second floor unshielded 60 dBA CNEL contour extends roughly 575 feet from SR76. The contours suggest that NSLU areas may exceed the County of San Diego 60 dBA CNEL exterior noise standard. Based on these findings, additional detailed exterior noise analysis was conducted to determine the noise impacts and needed mitigation measures.

The results of the specific noise modeling for 17 receptor locations on the project site are provided in Table 2-8-1, "Future Exterior Noise Levels." Modeled observer locations of the potentially affected NSLU's as represented in Figure 2-8-3, "Modeled NSLU Receptor Locations."

The project has established a home owners association (HOA) easement along SR-76 to maintain the citrus grove to provide additional noise attenuation to the results shown on Table 2-8-1. The easement is a minimum 100 feet wide. According to Caltrans Technical Noise Supplement (TeNS) section N-5515, shielding is one of the most effective ways of reducing traffic noise. Shielding occurs when the observer's view of the roadway is obstructed or partially obstructed by natural or manmade features interfering with the propagation of the sound waves. The attenuation credit given by the FHWA model to plantings, woods and vegetation is 5 dBA for the first 30 meters (100 feet), with an additional 5 dBA for the second 30 meters with a maximum of 10 dBA.

The Buildout analysis was modeled assuming future year traffic parameters assuming 13,000 Average Daily Traffic (ADT), 1,300 vehicles at Peak-Hour Volume, modeled speeds of 55 miles per hour (MPH), and a conservative vehicle mix of 87.0 percent auto, 5.9 percent medium trucks, and 7.1 percent heavy trucks.

As shown in Table 2-8-1, the project's design results in exterior noise levels that would meet the County of San Diego 60 dBA CNEL standard at all proposed lots

without incorporating the additional screening from the citrus grove. Noise mitigation is not necessary for the outdoor living areas for the proposed single-family lots as the project demonstrates Noise Element exterior noise level conformance. Thus exterior noise impacts are less than significant and no mitigation is required.

Although one lot, Lot 16, is within the 60 dBA line for first floor. However, due to topographic variations and screening, this effect is not significant. Second floor building façade noise levels were found to be above the standard of 60 dBA CNEL for six lots (5, 6, 15, 16, 29 and 30) as shown in Table 2-8-1. This finding is further discussed under Guideline 1C of this section.

Guideline 1B

To determine if direct off-site noise level increases associated with the development of the proposed project would result in an increase of 10 dBA CNEL, the traffic volumes for the existing conditions were compared with the traffic volume increase of existing plus the proposed project. The project will generate 528 daily trips, with a worst case peak hour volume of 53 trips (KOA, 2012). The existing average daily traffic (ADT) volumes are 8,320 along the nearest segment of SR76. Typically it requires a project to double (or add 100%) to the traffic volumes to have a direct impact of 3 dBA CNEL. The project will add less than a 10% increase to the existing roadway volumes and no direct impacts are anticipated. Therefore, Guideline 1B is not exceeded and impacts would be less than significant. No mitigation is required.

Guideline 1C

As discussed above, the noise analysis found that the second floor facades of Lots 5, 6, 15, 16, 29 and 30 are likely to have noise levels above the County standard of 60 dBA CNEL. Therefore the interior noise levels of structures proposed for these lots could exceed a level of 45 dBA CNEL. This represents a significant impact and mitigation is required (**Impact N-1**).

2.8.2.3 Guidelines for the Determination of Significance – Project-Generated Airborne Noise

According to the *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements for Noise* (January 2009) the project would have a significant project-generated airborne noise impact if it would generate airborne noise which, together with noise from all sources, will be in excess of the following:

Construction Noise

1. Noise generated by construction activities related to the project will exceed the standards listed in the San Diego County Code Section 36.409, Sound Level Limitations on Construction Equipment

Impulsive Noise

2. Noise generated by the project will exceed the standards listed in San Diego Code Section 36.410, Sound Level Limitations on Impulsive Noise

Sensitive Avian Species

3. Noise levels in excess of 60 dBA or ambient conditions, whichever is greater, may impact nesting sensitive bird species, including Coastal California Gnatcatcher, Least Bell's Vireo, and migratory birds.

2.8.2.4 Analysis – Project-Generated Airborne Noise

Guideline 1

Sections 36.408 and 36.409 states that, except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment including haul trucks, water trucks, graders, dozers, loaders and scrapers, can reach relatively high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

The U.S. Environmental Protection Agency (U.S. EPA) and the FHWA have compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance.

The single family units may be developed on a lot-by-lot basis, which may result in some lots undergoing building construction simultaneously but all grading activities and internal roadways, will be graded prior to the occupancy of any proposed Lots. A total of three loader/tractors, a water truck, a dozer, three scrapers and an excavator will be required during grading activities to complete the proposed grading operations. The anticipated equipment will be spread out over the site. For example, a single water truck and a single dozer may be utilized near the project boundary while the other equipment is working on the opposite side of the site.

The list of equipment and the associated noise levels utilized in this analysis are shown in Table 2-8-2, “Grading Operation Noise Levels”.

Existing residential and agricultural uses surround the site. As can be seen in Table 2-8-2, if all the equipment was operating in the same location for eight hours, which is not physically possible, at a distance as close as 135 feet from the nearest property line the point source noise attenuation from these construction activities is -8.6 dBA. This would result in an anticipated worst case eight-hour average combined noise level of less than 75 dBA at the property line. Given this data and the typical spatial and temporal separation of the equipment, the noise levels will comply with the County of San Diego’s 75 dBA standard at all property lines for the project. Guideline 2 is not exceeded, impacts are less than significant, and no mitigation is required.

Guideline 2

Section 36.410 generally restricts impulsive noise activities. Impulsive noise is defined as any single noise event or a series of single noise events, which causes a high peak noise level of short duration (one second or less), measured at a specific location. Examples include, but are not limited to, a gunshot, an explosion, or blasting.

No blasting, pile driving, and/or rock crushing is anticipated during the grading operations. Therefore, no impulsive noise sources are expected and the project is anticipated to comply with Section 36.410 of the County Noise Ordinance and no further analysis is required. Guideline 3 is not exceeded, impacts are less than significant, and no mitigation is required.

Guideline 3

Project grading and construction will occur within and adjacent to sensitive habitats, including Diegan Coastal Sage Scrub and Coast Live Oak Woodland. These sensitive habitats can support sensitive species, including Coastal California Gnatcatcher, Least Bell’s Vireo, and migratory birds. Construction activities could result in noise levels over 60 dBA in these habitat areas. If sensitive bird species are nesting or breeding during these times of elevated sound, there is a potential for a significant impact and mitigation is required (**Impact N-2**).

2.8.3 Cumulative Impact Analysis (Off-site Impacts)

The traffic analysis for the project concluded that the project would generate 528 daily trips, with a worst case peak hour volume of 53 trips (KOA, 2012). The existing average daily traffic (ADT) volumes are 8,320 along the nearest segment of SR76. Typically it requires a project to double (or add 100 percent) to the traffic volumes to have a direct impact of 3 dBA CNEL or be a major contributor to the cumulative traffic volumes. The

project will add less than a 10 percent increase to the exiting roadway volumes and no direct impacts are anticipated. Cumulatively the traffic volumes along the roadway segments are expected to potentially double but the project related increase would be minimal (less than 5 percent) of the overall increase. Therefore, the project traffic contributions are not cumulatively considerable. The additional traffic generated from the project would result in a less than one decibel increase to the cumulative analysis, and cumulative noise related to the project is considered less than significant.

2.8.4 Significance of Impacts Prior to Mitigation

- N-1 Since second floor facades of Lots 5, 6, 15, 16, 29 and 30 are expected to experience noise levels above the County standard of 60 dBA CNEL, the interior noise levels of structures proposed for these lots could exceed the interior noise standard of 45 dBA CNEL. This represents a significant impact.
- N-2 Project grading and construction activities could result in sound levels in excess of 60 dBA in sensitive habitat areas which could impact sensitive birds during their nesting or breeding season. This represents a significant impact.

2.8.5 Mitigation

- M-N-1 A Noise Restriction Easement shall be placed on Lots 5, 6, 15, 16, 29, and 30, requiring a future noise analysis and implementation of subsequent mitigation if two-story homes are proposed on these lots. Upon completion of precise grading plans and architectural building design specifications for these lots , a noise analysis shall be prepared to evaluate interior noise attenuation requirements. The analysis shall be completed prior to issuance of building permits for these lots. The analysis shall identify mitigation requirements to ensure interior noise levels do not exceed 45 dBA CNEL. Such measures could include, but are not limited to, use of dual-paned windows or other architectural improvements.
- M-N-2 Because the project site is considered potentially occupied by Least Bell's Vireo and Southwestern Willow Flycatcher, grading or construction noise in excess of 60 dBA shall not be permitted during the breeding season of these species (mid-March to mid-September), in order to avoid impacts to potentially nesting vireos, flycatchers, and/or other riparian obligate songbirds. This restriction may be waived if directed surveys for these two species are conducted on all areas within 300 feet of proposed grading or construction activity and it is found the birds are not present. The results of these surveys should be provided in a report to the Director of Planning

and Development Services and the Wildlife Agencies for concurrence with the conclusions and recommendations. An acoustician shall be present on site to monitor noise levels during grading that takes place within the above noted period unless it is determined by directed surveys by the biologist that the birds are not present. This mitigation measure is also shall reflect the biology section of the DEIR, 2.4.5, mitigation measure M-BI-1.

2.8.6 Conclusion

An acoustical analysis was for the proposed project by a consultant on the County's CEQA Consultant List.

The analysis concluded that traffic noise from SR76 will constitute the principal source of community noise that will affect the site. Six lots would experience noise levels above 60 dBA CNEL at second-story facades if two-story homes are proposed, which could result in interior noise level exceeding 45 dBA CNEL. Mitigation measure M-N-1 will require a Noise Protection Easement to be placed on Lots 5, 6, 15, 16, 29 and 30 to require a future noise analysis and implementation of subsequent mitigation if interior noise levels are shown to exceed 45 dBA CNEL. Such measures could include dual paned windows, which typically provide 15 dBA noise attenuation. Implementation of this mitigation measure will reduce sound level to acceptable levels and reduce the impact to below a level of significance.

Construction noise could impact sensitive bird species if construction noise levels exceed 60 dBA during the breeding season. Mitigation measure M-N-2, limits construction noise in excess of 60 dBA during the breeding season of these species (mid-March to mid-September), in order to avoid impacts to potentially nesting vireos, flycatchers, and/or other riparian obligate songbirds. This restriction may be waived if directed surveys for these two species are conducted on all areas within 300 feet of the proposed activity and note that the sensitive species are not present. This mitigation measure protects the sensitive species by keeping noise levels below 60 dBA and would reduce impacts to below a level of significance.

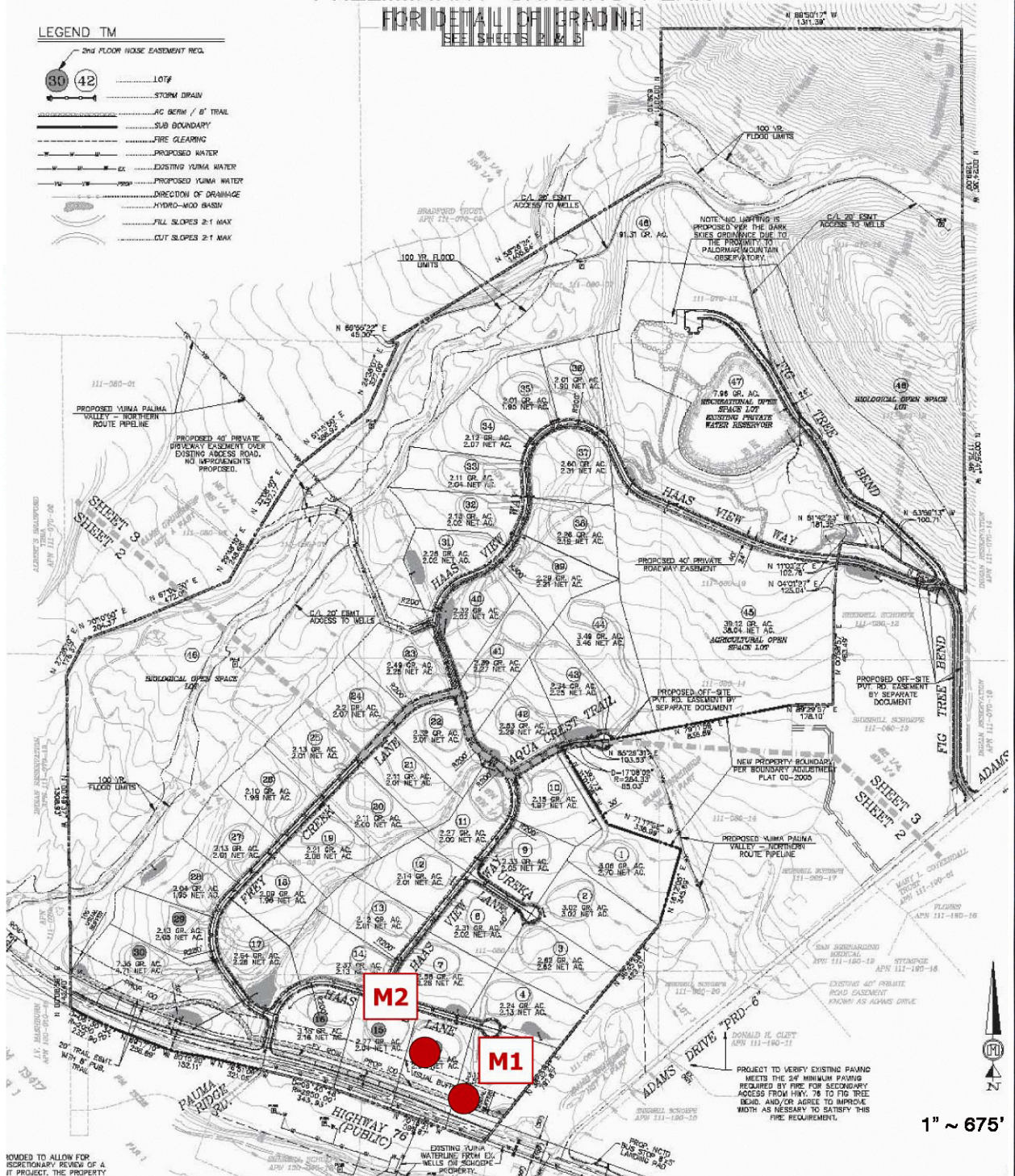
Cumulative impacts were evaluated using cumulative traffic data. The additional traffic generated from the project would result in a less than one decibel increase to the cumulative analysis, and cumulative noise related to the project is considered less than significant. No mitigation is required.

COUNTY OF SAN DIEGO TRACT NO. TM 5223 RPL-3 SHADOW RUN RANCH, PAUMA VALLEY PRELIMINARY GRADING PLAN

FOR DETAIL OF GRADING
SEE SHEETS 2 & 3

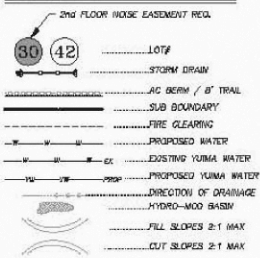
LEGEND TM

- 2ND FLOOR HOUSE EASTMENT REQ.
- LOT#
- STORM DRAIN
- AC BERM / B' TRAIL
- SUB BOUNDARY
- FIRE CLEARING
- PROPOSED WATER
- EXISTING YUMA WATER
- PROPOSED YUMA WATER
- DIRECTION OF DRAINAGE
- HYDRO-MOD BASIN
- FILL SLOPES 2:1 MAX
- CUT SLOPES 2:1 MAX



ROUND TO ALLOW FOR
DISCRETIONARY REVIEW OF A
IT PROJECT, THE PROPERTY

LEGEND TM



60 dBA CNEL Contours
 — First Floor
 Second Floor

75 dBA CNEL Contours Located at edge of roadway

575-Feet

295-Feet

LEGEND:

- FIRST FLOOR NOISE CONTOURS
- SECOND FLOOR NOISE CONTOURS



Future Noise Contours

Figure 2-8-2

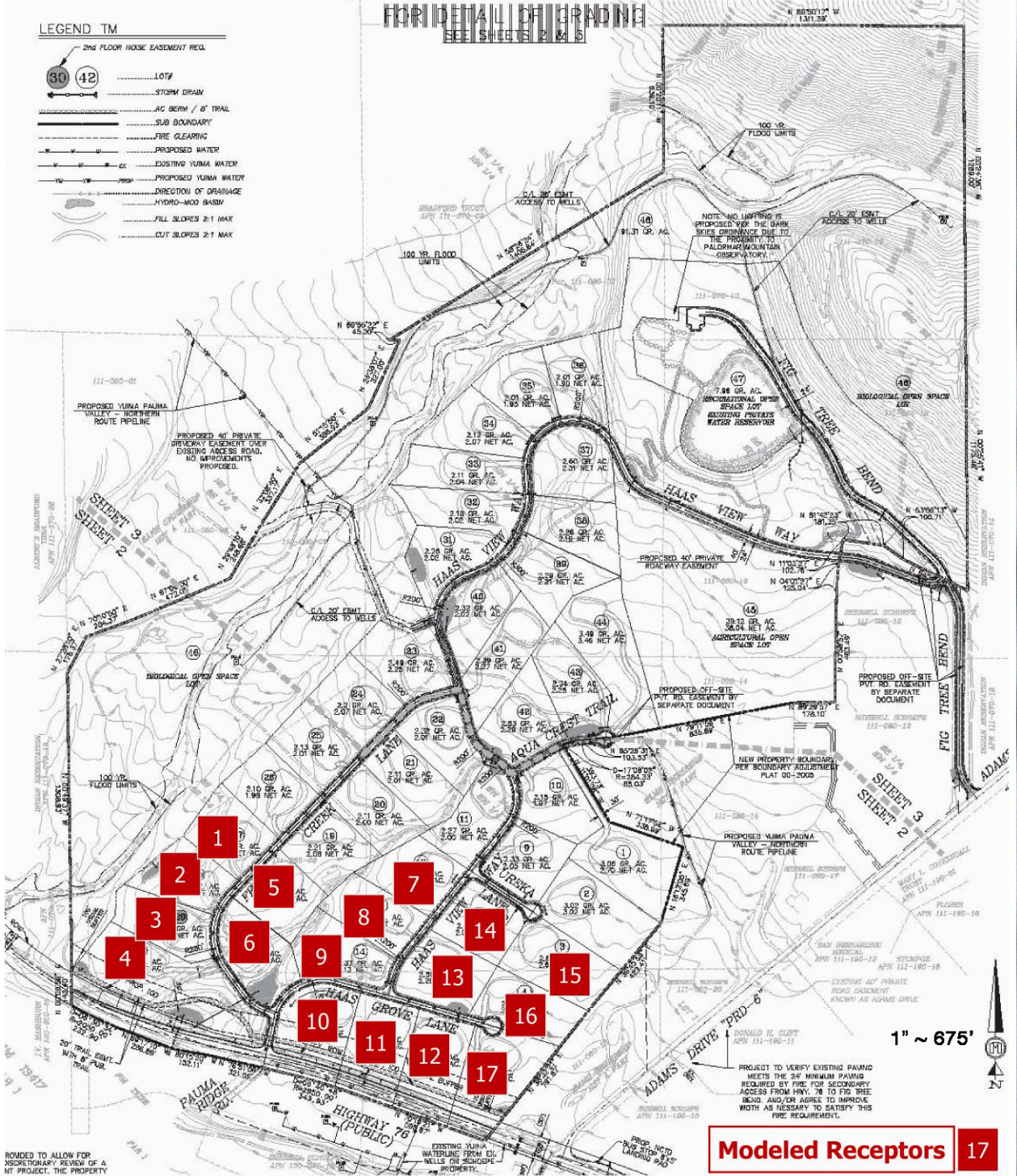
1" ~ 675'

COUNTY OF SAN DIEGO TRACT NO. TM 5223 RPL-3 SHADOW RUN RANCH, PAUMA VALLEY PRELIMINARY GRADING PLAN

FOR DETAIL OF GRADING
SEE SHEET 17 & 18

LEGEND TM

- 2ND FLOOR ROSE EASEMENT REG.
- 30 42 LOT#
- STORM DRAIN
- AC BERM / B' TRAIL
- SUB BOUNDARY
- FIRE CLEARING
- PROPOSED WATER
- EXISTING YUMA WATER
- PROPOSED YUMA WATER
- DIRECTION OF DRAINAGE
- HYDRO-MOD BASIN
- FILL SLOPES 2:1 MAX
- CUT SLOPES 2:1 MAX



Modeled Receptors

Modeled Receptor Number	Receptor Location (Lot #)	Receptor Elevation (Feet) ¹	Unmitigated Outdoor Noise Level (dBA CNEL) ²	Second Floor Façade Noise Levels (dBA CNEL) ³
1	27	815	52.1	56.0
2	28	813	55.3	59.2
3	29	802	57.0	61.9
4	30	785	59.2	63.3
5	18	823	53.4	57.0
6	19	839	51.3	55.5
7	12	849	51.7	55.9
8	13	827	53.6	57.2
9	14	811	56.3	59.3
10	16	788	60.1	62.7
11	15	789	60.0	62.6
12	6	787	60.2	62.5
13	7	819	55.2	58.7
14	8	839	52.6	56.7
15	3	831	52.9	57.1
16	4	813	55.0	58.9
17	5	793	59.8	62.4

¹ Receptor Elevation is 5-feet above the Pad Elevation for ground level and 15-feet above the Pad for the second floor.

² Exterior Mitigation or Interior Noise Study required per County Guidelines if **BOLD**

³ Interior Noise Study required per County Guidelines if **BOLD**

Construction Equipment	Quantity	Source Level @ 50 Feet (dBA) ¹	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50 Feet (dBA)
Scrapers	3	75	8	79.8
Tractors/Loaders/Backhoes	3	72	8	76.8
Excavators	1	70	8	70.0
Graders	1	74	8	74.0
Rubber Tired Dozers	1	73	8	73.0
Water Trucks	1	70	8	70.0
Cumulative Levels @ 50 Feet (dBA)				83.5
Distance To Property Line				135
Noise Reduction Due To Distance				-8.6
NEAREST PROPERTY LINE NOISE LEVEL				74.8
¹ Source: EPA 1971, FHWA and Empirical Data				